

## REMARKS

Claims 19 to 24 continue to be under consideration.

New claims 25 to 34 are being introduced.

New claim 25 is based on the language of claim 19.

New claim 26 is based on the language of claim 20.

New claim 27 is based on the language of claim 21.

New claim 28 is based on the language of claim 22.

New claim 29 is based on the language of claim 23.

New claim 30 is based on the language of claim 24.

New claim 31 is based on the language of claim 25.

New claim 32 is based on the language of the last paragraph on page 1 bridging to page 2 of the clean version of the substitute specification..

New claim 33 is based on the language of page 7, second paragraph of the clean version of the substitute specification..

New claim 34 is based on the drawing, in particular Figure 2. Applicant respectfully submits that a single part A-column is unknown in the state of the art.

### *The Office Action refers to Election/Restriction*

1. Newly submitted claim 18 is directed to a non-elected invention that is independent or distinct from the invention elected on December 30, 2005; therefore this claim is withdrawn from consideration.

Claim 18 has according to the requirement now been marked “withdrawn”.

***The Office Action refers to Claim Objections.***

2. Claim 24 stands objected to because it include reference characters which are not enclosed within parentheses, sec the second to last and third to last lines.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

The present amendment of claim 24 provides parenthesis for all reference characters.

***The Office Action refers to Claim Rejections - 35 USC § 112.***

4. Claim 19-25 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed Invention. While the specification discloses a bending step on the second region, it does not provide reasonable disclosure for how the work piece changes between Figure 2 and Figure 3, as described in the Brief Description of the Drawings.

Figures 2 and 3 represent different embodiments of the invention. The “Brief Description of the Drawing” has been amended to specify that Figure 3 is a separate embodiment.

6. Claims 19-24 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the Invention.

The present amendment changes claims 19 to 24 to render these claims definite.

7. The Claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

The present amendment changes claims 19 and 24 to obviate the rejection.

8. With regards to the wording of Claim 1, the sixth and seventh lines describe the tubular starting part as being reduced "over" particular regions; this makes the Claim indefinite.

Claim 19 has been amended by removing the language "over".

9. The appearance of the term "a mold blank" on the eighth line makes the Claim unclear. The examiner understands that the "tubular starting part" becomes the "mold blank" after a reduction deformation step occurs; however the manner in which the Claim is currently stated makes the mold blank appear to be a separate or new element.

The language of claim 19 has been amended to set forth now that the mold blank is a processed tubular starting part.

10. The examiner understands that the applicant is trying to transition between method steps when using the phrase "then following" or "that in the following;" however it is creating awkward and unclear language. Examiner suggests other phrases such as, "after (the particular step)" or elimination of the transition phrases completely.

The Applicant thanks the Examiner for his kind suggestions relating to elimination of "in the following" and has amended claim 19 along the lines kindly suggested by the Examiner.

11. Regarding claim 19, there is insufficient antecedent basis for the following limitations: "the shape (of an A-column)," "the A-column, " and "the required curvature (of the A-column)."

Claim 19 is being amended to clarify the situation of the A-column.

12. Regarding claim 24, the phrase "from about" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed, thereby rendering the scope of the claim(s) unascertainable.

Claim 24 has been amended to eliminate the word "about".

13. Also with regards to claim 24, the examiner believes "a starting blank" is the same element as "a tubular starting part," as in claim 19; however, as the claim stands "a starting blank" is a new and/or different element limitation. Examiner suggests changing "a starting blank" to "a tubular starting part."

As kindly suggested by the Examiner, the term "a tubular starting part" is now also used in claim 24.

14. Appropriate action is required.

Applicant is submitting amendments to the rejections expressed in the Office Action.

***The Office Action refers to Claim Rejections - 35 USC § 103.***

12. Claims 19-20 and 23-24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bignucolo et al. (US Patent 6,513,243) in view of Meredith (US Patent 5,074,555), as best understood. Bignucolo et al. discloses a method of producing a hollow molded part made of a metallic material in a shape of an A-column having a tubular starting part (1) with an outer diameter and a starting wall thickness (Figure 1).

Applicant respectfully disagrees.

The term “A-column” is mentioned nowhere in the reference Bignucolo et al. The reference Bignucolo et al. also fails to show the shape of an “A-column”. In the short description of the drawings of the reference Bignucolo et al., there is no mentioning of an “A-column”. Fig. 1 of the reference Bignucolo et al. shows a tubular blank. Figs. 2 to 5 and 8 of the reference Bignucolo et al. show intermediate products. Figs. 6, 7, and 9 of the reference Bignucolo et al. show axles. The “intermediate products” and the “axles” of the reference Bignucolo et al. are clearly not “A-columns”.

Initially the tubular starting part reduces, by radial deformation performed by rolling (fluoforming, rollers, Column 2, lines 32-35), a second conical region (5) and a third cylindrical region (4) to a smaller diameter (Column 2, lines 36-41) to

form a mold blank (a hollow first intermediate product 2). As best understood, the mold blank's second conical region is then bent under axial pull tension to a curvature (Column 2, lines 43-55, Figure 3). A final forming step is performed by inner high pressure metal forming (hydroforming) in the first and in the second regions (Column 2, lines 66-67 & Column 3, 1-4; Figure 6).

Applicant traverses.

The Office Action recites “a second conical region (5)”. The reference Bignucolo et al. mentions instead in column 2, lines 41 and 42 “two intermediate frustroconical portions 5”.

The Office Action recites “the second conical region (5) is then bent”. The reference Bignucolo et al. mentions instead in column 2, lines 49 to 51 “with the portions 4 and 5 symmetrically inclined or bent upwards with respect to the central portion 3”. There is no such symmetry as set forth in the reference Bignucolo et al. associated with the “A-column” of the present application.

The reference Bignucolo et al. states in column 3, lines 5 and 6: “By means of the above described hydroforming step there is obtained a finished axle 8”. Thus the reference Bignucolo et al. clearly teaches producing an axle 8, but does not suggest the “A-column” of the claims of the present application.

17. Bignucolo et al. discloses the invention substantially except for an increased wall thickness relative to the starting wall thickness in the second and third regions.

Applicant traverses as above. The reference Bignucolo et al. Teaches an axle and not the “A-column” of the present application as set forth above.

Meredith discloses a method of radially deforming a tubular shaft having second (61) and third (62) regions with an increased wall thickness (22) relative to the

starting wall thickness (20) (Column 3, line 55-56 and Figures 2a-b). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Bignucolo et al.'s radial deformation step can increase the wall thickness of the second and third region because "it is desirable to design (a tubular part) without the excessive weight (and) having a wall thickness along the tapered length (second region) and the tip portion (third region) able to provide a desired weight distribution and to withstand the forces exerted on the shaft tip (third region)" (Column 1, lines 45-50).

The reference Meredith agrees with the reference Bignucolo et al. not to form an "A-column" in clear contrast to applicant's claims.

According to the reference Meredith, column 1, line 6, an improved tubular metallic shaft for golf clubs or according to column 3, line 6, a golf shaft is produced. An "A-column" is neither an axle (Bignucolo et al.) nor a golf shaft (Meredith) nor a biological crossing of an axle and a golf shaft. No person of ordinary skill in the art would propose to use an axle and a golf shaft to make an "A-column".

As far as the increased wall thickness 22 in the reference Meredith in column 1, lines 45 to 50 is concerned about: "Thus, it is desirable to design a shaft without the excessive weight resulting from the use of an insert and having a wall thickness along the tapered length and the tip portion of the shaft able to provide a desired weight distribution and to withstand the forces exerted on the shaft tip.". Therefore, the increased wall thickness according to Meredith is furnished to provide a desired weight distribution of a golf shaft. Nothing is said in either the reference Bignucolo et al. nor the reference Meredith as to a desired weight distribution of the axle of Meredith. In view of this, there is no motivation for a person of ordinary skill in the art to provide an increased wall thickness to the axle of the reference Bignucolo et al.

The increased wall thickness of the frustroconical second region and of the cylindrical third region of the A-column of the present application is motivated by accepting larger loads in a crash case of the motor vehicle based on increased wall thickness of the A-column in the tapered central portion (2) (compare new claim 33 ). Nowhere is there expressed any need to provide an increased wall thickness to a center region of an A-column for accepting larger loads in case of a crash of a motor vehicle in the references Bignucolo et al. and Meredith.

18. Regarding claim 24, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the particular numerical values claimed depending on the characteristics desired for the finished product, they are not a patentable distinction.

The numerical values claimed in claim 24 clearly distinguish over values furnished for example to an axle according to the reference Bignucolo et al. or to a golf shaft according to the Meredith reference. For example, the angle specified in claim 24 “wherein a second conical region (2) of the mold blank (V) exhibits an angle  $\alpha$  of from 10 degrees to 85 degrees” would be clearly outside a reasonable value for the golf shaft of the Meredith reference.

19. Claims 21 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bignucolo et al. and Meredith as applied to claims 19-20 and 23-24 above, and further in view of Self et al. (US Patent 2,267,623). The combination of Bignucolo et al. and Meredith disclose the invention substantially except for an intermediate annealing prior to the pressure forming and annealing between the deformation step and the pressure forming step. Self



et al. discloses an intermediate annealing after a deformation step (Column 2, lines 35-39).

Applicant respectfully traverses the references Bignucolo et al. and Meredith as set forth above.

Self et al. Sets forth in column 3, lines 35 and 39 : “Between successive swaging operations, where desired or necessary, the mandrel or mandrels are removed, and the partially shaped blank is annealed, pickled, bright-dipped and cleaned, as hereinafter described.”

While the Office Action states that the reference Self et al. discloses “an intermediate annealing”, in fact the Self et al. reference teaches everything together “annealed, pickled, bright-dipped and cleaned”. There is nothing in the reference Self et al. to direct a person of ordinary skill in the art to do :“annealed” and not for example “pickled”. Applicant urges that the reference Self et al. clearly teaches everything together “annealed, pickled, bright-dipped and cleaned” and that a selection of only one process item from four of the reference Self et al. is clear hindsight in view of the present invention. Furthermore it also would be additional hindsight to select “annealed” from the four different processes performed by the reference Self et al. together and there is no suggestion in the Office action why if a person of ordinary skill in the art should make a selection among processes, “cleaning” would not be the favorite process of a person of ordinary skill in the art.

Furthermore the reference Self et al. specifies that the four processes together “annealed, pickled, bright-dipped and cleaned” should occur “between successive swaging operations”.

This teaching of the reference Self et al. is clearly contrary to the requirement of claim 21 that “an intermediate annealing of the mold blank (V) is performed prior to the inner high pressure metal forming”, where the inner high pressure

metal forming or hydro forming requirement of claim 21 stands in clear contrast to the successive swaging operation of the reference Self et al..

Furthermore, the teaching of the reference Self et al. that four processes together “annealed, pickled, bright-dipped and cleaned” should occur “between successive swaging operations” is clearly directed away from the requirement of claim 22 that “an intermediate annealing of the mold blank (V) is performed between the step of the radial or tangential deformation method and the step of inner high pressure metal forming.”

The inner high pressure metal forming or hydro forming requirement of claim 22 stands in clear contrast to the successive swaging operation of the reference Self et al..

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to anneal the product in order to prevent "failure of the blank" (Column 5, lines 69-70) in a manner such as cracking or breaking before further forming is performed.

Applicant respectfully disagrees.

The reference Self et al. in column 5, lines 65 to 71 states: “In preparation for the use of the process, the blank preferably is washed to remove grease and oil, dried, and is then annealed at a temperature around 900 degrees F., or to a degree that insures against failure of the blank or gripping of the mandrel during the first swaging step or steps.”. Therefore, the reference Self et al. Places the annealing step prior to the first swaging step.

In contrast, claim 21 of the present application contains the limitation “an intermediate annealing of the mold blank (V) is performed prior to the inner high pressure metal forming”. Therefore, the reference Self et al. directs to do annealing prior to swaging in contrast to claim 21 of the present application requiring annealing prior to the inner high pressure metal forming or hydro forming.

***The Office Action refers to Response to Arguments***

20. Applicant's arguments filed on June 22, 2006 have been fully considered but they are not persuasive.

Applicant has high hopes that the present arguments are more persuasive.

21. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Bignucolo recite all the state-of-the-art. The purpose of having a secondary, teaching reference is to combine what state-of-the-art is lacking from the base reference.

The reference Bignucolo et al. clearly fails to teach an A-column.

21. It is noted that the applicant only claims the shape of an A-column and not an A-column. Applicant's drawings show the shape of an A-column and/or an A-column and therefore, the claims have been rejected in art that also shows corresponding drawing representations of such.

Applicant sincerely thanks the Examiner for this suggestion. New claims 25 and 31 are being submitted now, which are both directed to an A-column.

22. Examiner apologizes for the typographical error with regards to the Self et al. reference in the Notice of Reference Cited filed February 16,

2006. A new PTO-892 form has been submitted with this action to amend the inconsistency.

The applicant appreciates that the last Office Action was not made final.

23. With regards to applicant's arguments involving the annealing step, if the annealing is performed after the radial forming step, as described in the above rejection, and radial forming is performed prior to the inner high pressure forming, as stated in independent claim 1; then inherently annealing can be performed prior to pressure forming and annealing can be performed between radial forming and pressure forming. Although there is a claimed bending step between the radial forming and the pressure forming, no relationship exists between the annealing and the bending steps.

The Examiner is deemed correct in this assessment and the applicant thanks for the assessment.

Reconsideration of al rejection is respectfully requested.

All claims are believed to be in allowable form and a Notice of Allowance is earnestly solicited.

Respectfully submitted,  
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